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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Minoru Ohara

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EXAMINER

BAREFORD, KATHERINE A

ART UNIT

PAPER NUMBER

1792

MAIL DATE

DELIVERY MODE

10/22/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/500,961	<b>Applicant(s)</b> OHARA, MINORU	
	<b>Examiner</b> Katherine A. Bareford	<b>Art Unit</b> 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 August 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 73-84 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 73-84 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/7/08</u> .  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. The amendment of August 7, 2008 has been received and entered. With the entry of the amendment, claims 1-72 have been canceled, and claims 73-84 are pending for examination.

### ***Election/Restrictions***

2. The Examiner notes that non-elected claims 3-6, 12-17, 19-22, 24-27, 29-32, 34-37 and 39-72 have been canceled.

### ***Specification***

3. The substitute specification filed August 7, 2008 has been entered.

### ***Claim Objections***

4. The objections to claims 7-11, 18, 23, 28, 33 and 38 because of informalities is withdrawn due to the cancellation of these claims in the amendment of August 7, 2008.

### ***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 74 and 80 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 74, lines 1-2, claims that "said cooling holes are not drilled through". This is confusing as worded because it is unclear when the coating holes would be drilled through – before coating, after coating, etc. As well it is unclear what the "drilled through" would require -- through the entire component, through any surface, etc? For the purpose of examination, the Examiner has treated the claim as meaning that holes are "not drilled through the entire component" and that the timing can occur anywhere in the process, i.e. "not drilled through before coating" or "not drilled through after coating", for example.

Claim 80, lines 1-2, claims that "said cooling holes are not drilled through". This is confusing as worded because it is unclear when the coating holes would be drilled through – before coating, after coating, etc. As well it is unclear what the "drilled through" would require -- through the entire component, through any surface, etc? For the purpose of examination, the Examiner has treated the claim as meaning that holes are "not drilled through the entire component" and that the timing can occur anywhere in the process, i.e. "not drilled through before coating" or "not drilled through after coating", for example.

***Double Patenting***

7. Applicant is advised that should claim 78 be found allowable, claim 84 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claims 78 and 84 both depend from claim 73 and have the same requirements. If applicant intended claim 84 to depend from claim 79, the claim should be amended to provide this requirement.

***Claim Rejections - 35 USC § 102***

8. The rejection of claims 1, 2, 7, 10, 18 and 33 under 35 U.S.C. 102(b) as being anticipated by Clingman et al (US 5130163) is withdrawn due to the cancellation of the claims in the amendment of August 7, 2008.

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 73, 74, 76-80 and 82-84 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clingman et al (US 5130163) in view of Kang et al (US 5800695).

Claims 73, 79: Clingman teaches a method of forming a thermal barrier coating by spray coating over a surface of a component. Column 1, lines 35-60. The component has cooling holes (perforations) made in it. Figure 2 and column 2, lines 15-50 (see perforations 22, for example). A masking process where masking plugs (pins) are inserted into the cooling holes is provided. Column 2, lines 55 through column 3, line 20. The masking process includes forming the plugs so that they do not protrude above the surface of the component. Column 3, lines 1-11 and figure 4. The masking plug can be composed of silicone rubber. Column 2, lines 60-65. The rubber would be "elastic" as it is described as "elastomeric". Column 3, lines 10-20. Then blasting treatment process is provided where the surface of the component is blasted and coarsened (roughened) to prepare the surface for coating. Column 3, lines 20-30. Then a spray coating process is provided where a thermal barrier coating is formed by spray coating over the surface of the coarsened component. Column 3, lines 30-65 and column 1, lines 35-45.

Claims 74, 80: the cooling holes are not "drilled through" as the holes do not extend all the way through the component, for example. Column 2, lines 15-50 and figure 2 (shrouded side perforations 18 are offset relative to perforations 22). As well,

drilling through does not occur after coating, as the plugs are removed by thermal/chemical treatment or chemical treatment rather than drilling. Column 4, lines 25-60.

Claims 76, 82: Clingman teaches that the material of the masking pin is elastic and resistant to blasting (column 3, lines 25-30), is resistant to the heat caused by the spray coating (as the plug remains after thermal spray coating and must be removed, column 4, lines 25-35), has stripping easiness as it can be entirely removed after coating (as the plug is stripped out, and as the air flow remains the same after the treatment, column 5, lines 1-10), and as to adherence and wetness to prevent thermal barrier coating material from accumulation, teaches that the bond coat and top coat do not readily adhere to the plug material and almost all particles do not adhere (column 3, lines 45-55 and column 4, lines 1-6).

Claims 77, 83: the masking plug can be composed of silicone rubber. Column 2, lines 60-65. The rubber would be "elastic" as it is described as "elastomeric". Column 3, lines 10-20.

Clingman teaches all the features of these claims except (1) that liquid silicone rubber is injected into the cooling hole without coating the liquid onto the surface of the component and drying and hardening the rubber (claims 73, 78, 79, 84). Clingman does teach that silicone rubber, in a viscous spreadable state is applied and forced into the holes, and then dried and hardened to an elastomeric body. Column 2, line 55 through column 3, line 20.

Kang teaches providing maskant into cooling holes in a gas turbine engine component. Column 1, lines 1-10. The maskant is provided into the holes by injecting into the cooling holes in a liquid state, and then cured to harden. Column 2, lines 15-45. The maskant is filled into the cooling holes so that the maskant is flush with the surface of the component. Column 2, lines 25-30. Kang teaches that when injecting the maskant, care should be taken that the maskant is not present on surfaces intended to be coated. Column 2, lines 39-40 and figure 4. Kang further teaches to remove any maskant that is present on the outside of the component. Column 2, lines 40-41.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Clingman to inject the maskant in a liquid state as suggested by Kang, with an expectation of providing desirable protected surfaces because Clingman teaches to provide the maskant in a viscous spreadable state (indicating flow) and force it into the holes followed by curing and hardening, and Kang teaches that a conventional desirable way to force maskant into cooling holes is to provide it in a liquid form and then cure to harden. It would further have been obvious to provide that when following the process suggested by Clingman in view of Kang to fill the holes with the maskant without coating the liquid elastic body onto the surface of the component, since as directed by Kang, maskant should be filled flush with the surface of the component, which would mean that the material would not coat the surface of the component, and Kang also teaches to take care that maskant is not provided on the surfaces intended to be coated. While Kang indicates that excess on the



surface can be removed, the teaching of filling flush and to take care that maskant is not provided on the surface would suggest that one of skill in the art should simply control conditions so as to not get any coating on the surface. This would allow for efficient coating, as excess coating would not be used, and a further cleaning step would not be needed.

11. Claims 75 and 81 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clingman in view of Kang as applied to claims 73, 74, 76-80 and 82-84 above, and further in view of the admitted state of the prior art.

Clingman in view of Kang teaches all the features of these claims except that the component is specifically a combustion transition piece. Clingman does teach that the component is to be used in a gas turbine engine combustor, for example. Column 2, lines 20-25. The cooling holes and the coating can be provided in an internal periphery surface of the component. Column 1, lines 35-60 and column 2, lines 30-35 (the inside lamina 12 is the exposed surface to be treated).

The admitted state of the prior art, at pages 1-3 of the specification, teaches that combustion transition pieces (103) are well known parts of a combustor in a gas turbine with cooling holes which are to be coated with thermal barrier coatings (with masking of the holes) on an internal periphery surface of a wall.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Clingman in view of Kang to use a combustion

transition piece as the substrate component to be spray coated on the internal periphery as suggested by the admitted state of the prior art, with an expectation of providing desirable protected surfaces because Clingman in view of Kang teaches to provide thermal barrier coatings on internal periphery of components to be used in a gas turbine engine combustor, and the admitted state of the prior art teaches that a conventional part of a combustor in a gas turbine that contains cooling holes to be treated on an internal periphery with thermal barrier coating is a combustion transition piece.

### *Response to Arguments*

12. Applicant's arguments filed August 7, 2008 have been fully considered but they are not persuasive.

Applicant argues that Clingman does not provide the claimed "forming masking pins in the cooling holes by filling each of the cooling holes with a liquid elastic body without coating the liquid elastic body onto the surface of the component", but instead applies the coating to the surface 20 intended to be coated (and troweled into holes in the component).

The Examiner has reviewed these arguments, however, the rejection is maintained. The Examiner notes that Clingman does not provide this newly claimed feature. However, the Examiner has provided Kang, as discussed in the rejection above, as to the suggestion to alternatively apply the masking pins by filling the cooling holes by injection of liquid elastic body without coating the liquid elastic body onto the

surface of the component. Applicant has provided no arguments against the use of Kang, which was previous cited as to the suggestion of injecting the masking pin material in liquid form.

### *Conclusion*

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571) 272-1413. The examiner can normally be reached on M-F(6:00-3:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy H. Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Katherine A. Bareford/  
Primary Examiner, Art Unit 1792